



STATE OF WASHINGTON
ENERGY FACILITY SITE EVALUATION COUNCIL
PO Box 43172 • Olympia, Washington 98504-3172

FACT SHEET
SATSOP COMBUSTION TURBINE PROJECT
NPDES PERMIT WA-002496-1

APPENDIX C

Response to Comments

December 9, 2002

The Draft Permit and Fact Sheet for NPDES Permit No. WA-002496-1 both received written comments and testimony in hearing. Prior to preparing responses to comments, complex comments were divided into component parts and redundant comments were consolidated. The written comments and relevant testimony are attached at the end of this appendix.

CONSOLIDATED COMMENTS

1. How can the permit place requirements on facilities or systems not owned by the permittee?

As stated in the Fact Sheet (page 1), “regulations require that a permit be issued before water can be discharged into waters of the state.” The Satsop Combustion Turbine (CT) Project would discharge industrial wastewater to the Chehalis River through the blowdown line and diffuser (Outfall 001 owned by the Grays Harbor Public Development Authority [PDA]). Additionally, stormwater from the Satsop CT Project is conveyed to Pond C-1, also owned by the PDA.

Discharges, whether to surface or ground waters, must comply with water quality standards appropriate for a specified location. It is the responsibility of the permittee, in this case Duke Energy, to ensure that the discharge meets effluent limits. The permittee is also responsible to ensure that the discharge conveyance and outfall systems function adequately to contain and deliver the discharge to the permitted outfall locations regardless of that system’s ownership.

2. How can a permit be issued when the fact sheet and draft permit available for public review and comment includes both Phase I and Phase II but the project now only involves Phase I?

The Fact Sheet and Draft NPDES Permit were developed to cover a facility that includes two essentially identical combustion turbine electrical generating facilities (Phase I and Phase II) located at a 22-acre site identified as the Satsop CT Project site. Construction on Phase I was under way and Phase II was being designed at the time of the NPDES public meeting on September 4, 2002. Just before the public meeting for the Fact Sheet and Draft NPDES Permit, the permittee asked EFSEC to suspend consideration of Phase II of the project. This requested change does not invalidate the Fact Sheet and Draft NPDES Permit. The permit and much of the Fact Sheet cover issues independent of whether the project has one or two combustion turbine facilities at the Satsop CT Project site.

It is not the Council’s intent to revise the Fact Sheet. The following updates or revisions to the Fact Sheet, however, are appropriate:

- **Page 4, Section 2.2 History** - The following sentence should be added to the end of the Site History paragraph, “On August 27, 2002, Duke Energy requested that the Council suspend consideration of Phase II of the Satsop CT Project.”
- **Page 8, Section 2.4 Industrial Process** - Note the first sentence under the heading Overview of the Proposed Changes to the Facility should read as, “At the request of Duke Energy, the Council is no longer reviewing the Request for Amendment to the Site Certification

Agreement that would allow construction of another 650-MW, natural gas-fired, combined-cycle, electric-generating facility called Phase II.”

- **Page 10, Section 2.5 Water Pollution Control Measures Outfall 001** - The circulating cooling tower will consist of nine rather than 19 cells.
- **Page 19, Section 2.8 Wastewater Characterization** - Reference to Table 5 and Figure 9 is no longer applicable.
- **Page 21, Section 2.8 Wastewater Characterization** - Table 5 is no longer applicable.
- **Page 26, Section 2.8 Wastewater Characterization** - Figure 9 is no longer applicable.

Information necessary to set flow limitations will be provided by the permittee within 120 days of permit issuance. This information must be developed in consultation with the Departments of Ecology and Fish and Wildlife, and be approved by the Council prior to any wastewater discharge. All other permit conditions are applicable regardless of project configuration.

3. How can a permit be issued when further information on the discharges and receiving water is required to ensure that the discharges meet the standards?

As stated above and in the Fact Sheet introduction, a permit is required before wastewater can be discharged into waters of the state. It is customary for the authorized administrator to issue an NPDES permit for facilities with no history of discharge to include conditions that require early verification of data used to develop effluent limits and permit condition assumptions. Since the Satsop CT Project is under construction, no discharge has occurred to date. Much of the information used to develop the existing permit, and to draft the reissued permit for which the comments being addressed in this response to comments were generated, came from data gathered for the WPPSS Nuclear Power Projects WNP-3 and WNP-5. The data on process water and receiving water quality are dated (November 1980, October 1981, and October 1982) and may not reflect current conditions. Additionally, many of the facilities proposed to be used for conveyance and discharge of wastewater were designed and constructed for the nuclear projects and have never been used.

The Draft Permit contains several special conditions that will generate updated information on the condition of conveyance and discharge facilities (Special Conditions S9 and S10), and on process and receiving water quality (Special Conditions S11 and S12). These special conditions have compliance schedules intended to provide the administrator and the permittee with information as early as possible to avoid water quality violations and lead to further conditions, as necessary. Special conditions for outfall evaluation (S9) and receiving water study (S12) remain unsatisfied in the original, expired permit and are carried over to the revised permit.

4. How is quench water used by the Satsop Phase I project?

Article V in the Satsop Combustion Turbine Project Site Certification Agreement states the following:

“The two combustion turbine units are limited to a total of 9.5 cubic feet per second, of which 8.6 cubic feet per second will be for power production, including quench water to meet the limits of the NPDES permit. **The remaining 0.9 cubic feet per second is for quench water to cool the Satsop Combustion Turbine Project discharge below the temperature set in the NPDES permit.**” (emphasis added)

It is important to evaluate the effectiveness of, and need for, the use of Ranney Well water as quench water to reduce effluent temperature.

Temperature monitoring required by special condition S2.C will determine the effectiveness of using Ranney Well water for temperature reduction.

Also, the temperature/quench water study required as part of special condition S12 would evaluate the effectiveness of the use of heat exchangers for the Satsop CT Project. No information on their use or anticipated effectiveness was made available for development of the Fact Sheet and Draft NPDES Permit. If this equipment can reduce the discharge temperatures to levels below the permit effluent limits, the use of additional quench water would be unnecessary, and AKART (all known, available, and reasonable methods of prevention, control, and treatment) provisions in WAC 173-201A would require the permittee to use the heat exchangers (and any other appropriate technology) instead of the 0.9 cfs of quench water.

5. What is the basis for the effluent temperature limit?

The Chehalis River, a Class A water body, has a water quality criteria of 18°C as established in Chapter 173-201A of the Washington Administrative Code (WAC). Comments received from the Washington Department of Fish and Wildlife (WDFW) indicated that 60°F (15.6°C) was the upper limit to allow normal development of chinook salmon. Water temperatures are likely primary determinants of when chinook spawn, how long the eggs incubate (development is directly related to water temperature), and when fry emerge. Chinook prefer a temperature of 50 to 55°F for spawning and incubation, and the tolerance range for hatching is 41 to 58°F (Bell 1986). Water temperatures that are too warm or too cold influence migration timing and may result in delays (Hallock et al. 1970; Bjornn and Reiser 1991). Fall chinook's tolerance range for migration is 51 to 67°F (Bell 1986).

Duke Energy and WDFW reached an agreement for the project to meet an effluent temperature limit of 16°C on September 4, 2002. As the water quality standard for this discharge would normally be 18°C, the permit writers support revising the draft NPDES temperature condition from 15.6°C to 16°C, to accurately reflect the agreement between the proponent and WDFW.

The effluent temperature limit of 16°C will need to be met at the discharge point into the Chehalis River. Monitoring requirements in special condition S2.C set one of the temperature

sample points at the blowdown – after blending. The intent of this sample point was to have a temperature reading of the effluent as it is discharged from the site. Concerns have been raised that the distance between the site and Outfall 001 may increase the temperature of the effluent prior to discharge into the Chehalis River. Special condition S12.C should allow the Council to determine whether the temperature limit is being met by the permittee. As part of special condition S12.C, the permittee must provide a sampling plan for parameters such as temperature. The permittee must demonstrate that the temperature limit is being met, and the effluent study required by S12.C should verify that the temperature limit is being met as the effluent is discharged into the Chehalis River.

Washington Department of Ecology is reviewing the temperature standard and may revise it while the Satsop CT NPDES Permit is active. If the temperature standard for the Chehalis River is lowered to some level below 16°C, the permit would need to be revised to meet the new standard.

6. How can a permit be issued if the wastewater characterization shows exceedances of water quality limits?

The metals exceedance issue is based on theory – extrapolated concentrations using dated information (see the discussion under Comment 3), some of which are non-detections where one-half the detection limit was used in place of actual measured concentrations. This illustrates the lack of recent and reportable water quality data and provided the basis for permit special condition S11. The waste characterization table (Table 4 of the Fact Sheet) was revised using data provided by the permittee. It was compared with surface water quality standards given in WAC 173-201A, and determined using a hardness concentration of 15 mg/L. The results indicate potential exceedances for cadmium, copper, mercury, and selenium with full flow of quench water and the addition of lead and zinc exceedances without quench water. The revised Table 4 is included at the end of this response to comments document.

The Outfall Evaluation (S9), the Process Water Evaluation (S11), and the Receiving Water Study (S12) are required within specified time periods after the permit is issued. Reports must be approved before discharge is allowed. When compliance with revised permit special conditions S9, S11, and S12 are met, a more appropriate evaluation of the project's potential to exceed water quality standards and the effectiveness of the proposed treatment strategies can be conducted. The results of these studies may require the permit to be reopened.

7. Does the permit allow for a mixing zone?

A mixing zone is allowed in “waters of the state” if the conditions of WAC 173-201A-100 are met. The Draft NPDES Permit does not authorize the use of a mixing zone to meet effluent limits. As discussed above in response to comment number 7, existing data indicate that metals may be present in the water used for process water. If present, these metals would be concentrated at the Satsop CT Project to levels that exceed effluent limits. If this is the case, a mixing zone would likely be required for the effluent from the Satsop CT Project to meet permit limits. Special condition S11, Process Water Evaluation, is intended to verify to presence and

concentrations of the metals of concern. Special condition S11 should be completed as soon as possible to determine if the permittee needs to request a mixing zone.

If a mixing zone is required to meet water quality standards, completion of the Receiving Water Study (S-12), Outfall Evaluation (S-9), and Dilution Modeling must be completed as soon as possible. No discharge from Outfall 001 would be allowed until a mixing zone had been approved. It should be noted that the previous NPDES allowed a mixing zone, but also required a mixing zone study, a raw water study, and a study of Outfall 001.

8. Why are there conditions for use of Outfall 001?

The Satsop CT Project is proposing to use the existing blowdown line and modify the existing diffuser to discharge wastewater into the Chehalis River using Outfall 001 under the existing NPDES Permit. The Council, through its authority and obligations to administer the wastewater discharge permit for the Satsop CT Project (Chapters 80.50 and 90.48 RCW), is responsible for inspecting and identifying needed improvements to the outfall and associated diffuser, and has authority to specify any needed upgrades or repairs for structures used by the Satsop CT Project, regardless of ownership. It is the permittee's responsibility to ensure that the blowdown line and diffuser function adequately and meet requirements imposed by the Council.

Grays Harbor PDA prepared and submitted a Joint Aquatic Resource Permit Application (JARPA) and Biological Assessment to the U.S. Army Corps of Engineers (Corps), WDFW, Washington Department of Ecology (Ecology), and the County of Grays Harbor for approval to modify the diffuser at Outfall 001. The JARPA indicated that work was planned to begin August 12, 2002, and would last from two to five days. As of September 26, 2002, a Hydraulic Project Approval from WDFW and a Shoreline Substantial Development Permit exemption letter from Grays Harbor County have been issued for the proposed work. Still outstanding are approvals under Section 404 of the Clean Water Act and Section 10 of the Rivers and Harbors Act from the Corps and Section 401 (CWA) Water Quality Certification from Ecology. Based on information provided to the Council by Jim Green (Corps), those approvals are not likely to be granted during 2002.

The JARPA described the PDA's intent to abandon the existing diffuser in place and replace it with a new diffuser structure upstream on the blowdown line within the Chehalis River. The JARPA did not satisfy permit special condition S9, Outfall Evaluation. Outfall evaluation was also a condition of the existing permit. All the requirements of S9 are to be satisfied before commercial operation of the Satsop CT Project begins.

Though not required in S9, a hydrostatic (pressure) test of the blowdown line using air would be appropriate to verify integrity of the pipeline before introducing water into the pipeline and diffuser for subsequent testing. The Council, through the Site Certification Agreement will ensure that appropriate test specifications are applied to a hydrostatic test.

As of September 26, 2002, the Council is not aware of compliance with S9 or of any hydrostatic tests of the blowdown line. It is important that this work be done as soon as possible so that the

integrity of the discharge conveyance system can be verified and any problems can be rectified prior to effluent discharge.

Potential impacts on the aquatic environment resulting from the proposed work on Outfall 001 are being evaluated by the Corps and Ecology. There is a concern that the Biological Assessment relied on outdated information in its analysis of potential effects to listed species. The Corps may require, as part of its review of the diffuser replacement project, updated receiving water and process water quality data. This information also is required to satisfy permit special conditions S11 and S12. The Corps may require this information earlier than is specified in the NPDES permit. Impacts resulting from hydrostatic testing of the blowdown line described above are expected to be minimal.

Finally, a concern was raised about risks of residual chlorine associated with discharge through a multi-port diffuser. A multi-port diffuser should not be relied upon for adequate dechlorination. This should be properly addressed in the process design with introduction of a dechlorination agent such as citric acid, if necessary. The permittee should discuss this specific issue in satisfying special permit condition S11, Process Water Evaluation, where it is required to evaluate all compounds used in the process to include neutralization compounds.

9. Why are there conditions for use of Pond C-1?

The Satsop CT Project is proposing to use the existing C-1 Pond (Outfall 002B) for discharging industrial stormwater. The Council, through its authority and obligations to administer the wastewater discharge permit for the Satsop CT Project (Chapters 80.50 and 90.48 RCW), is responsible for inspecting and identifying needed improvements to this outfall, and has authority to specify any needed upgrades or repairs for facilities used by the Satsop CT Project, regardless of ownership. It is the permittee's responsibility to ensure that the outfall functions adequately and meets the requirements imposed by the Council.

Monitoring requirements for stormwater discharges are contained in special condition S2.D. The sampling conditions have been changed to correspond to the monitoring requirements contained in Washington State Department of Ecology's Industrial Stormwater General Permit, issued Sept. 20, 2002.

WDFW has requested that the Council coordinate the review and approval with them of the evaluation and any modifications to the C-1 Pond. Permit special condition S10 has been modified to include this coordination.

An engineering evaluation and corrective actions (if required) need to be completed before the seasonal rains set in, which would complicate construction activities. The Council believes it is in the best interest of all parties to be proactive and identify and make necessary improvements (if required) to the pond instead of reacting to situations caused by an under-designed structure. The Council will require the engineering evaluation for Pond C-1 to be submitted within thirty (30) days of the effective date of the permit. Any required improvements to Pond C-1 would need to occur as soon as possible to avoid problems resulting from significant rainfall.

SPECIFIC COMMENTS

Mr. Steven G. Eberl, P.E., Washington State Department of Ecology

Draft NPDES Permit

1. **Table 1 Effluent Limits** – *Table is missing BPT categorical limit 423.12(b)(2) “There shall be no discharge of polychlorinated biphenyl compounds.”*

Table 1 has been modified in the permit to include Priority Pollutants and PCBs under parameters. The text, “there shall be no discharge of polychlorinated biphenyl compounds” is included in footnote 5.

2. **Page 3 – Table 1 Footnotes** – *Footnote 1 is missing word “exceed” after shall not.*

Footnote 1 has been corrected.

3. **Page 4 – Table 4 Monitoring Schedule** – *Correct units from Mg/L to mg/L.*

Table 4 has been revised as noted.

4. **Page 7 – S3.A. Reporting** – *Recommend changing language regarding Outfall 002 monitoring submittals. DMR submittal should occur every month. Permittee should enter “no discharge” on each DMR if no discharge occurred.*

Text on page 7, S3.A of the permit has been modified to reflect the quarterly reporting requirements, as is consistent with the Washington State Department of Ecology’s Industrial Stormwater General Permit, issued September 20, 2002.

Fact Sheet

1. **Page 20 and 21 – Tables 4 and 5** - *Could not find supporting calculations for several WAC 173-201A water quality standards presented in the Acute and Chronic Criteria columns. What receiving water hardness was used in the criteria calculations for cadmium, chromium, copper, nickel, lead, and zinc?*

A revised Table 4 is included at the end of this document. Equations used are those presented in WAC 173-201A. A hardness value of 15.0 mg/L was used.

2. **Page 27, First Paragraph** – *Could not find calculations for determining if a reasonable potential exists to violate water quality standards for each pollutant expected or known to be present. The reasonable potential process requires the maximum expected effluent concentration, ambient concentration, and acute and chronic dilution factors.*

Backup calculations for surface water quality standards and wastewater characterization values are provided after the revised Table 4 at the end of this document.

3. *Could not find calculations for water quality-based effluent limits for total residual chlorine, which are greater than the acute and chronic water quality standards. All other water quality-based limits appear to be applied as end-of-pipe limits, with no dilution zone granted.*

Table 4 was revised using a hardness of 15.0 mg/L for determining water quality-based limits. Potential exceedences exist for cadmium, copper, lead, mercury, and selenium. EFSEC's independent consultant did not determine water quality-based effluent limits for residual chlorine. The limits are technology-based and are a carry-over from the existing permit.

4. **Page 28 – Second Paragraph** – *Assume the language regarding former Outfall 002 “will be covered in a separate permit issued by Ecology” implies the issuance of the NPDES industrial stormwater general permit to the Satsop PDA.*

According to comments received by the Satsop Development Park (Grays Harbor Public Development Authority) on the Draft NPDES Permit, Ecology issued an Industrial Stormwater General Permit to the PDA for their facility August 21, 2002.

5. **Page 28 – Table 7** – *Effluent limit for PCBs should not refer to Footnote 1, but should state “no discharge.”*

See response to the first comment under the Permit heading.

6. **Appendix D – Reference Table 1** – *Table is missing BPT categorical limit 423.12(b)(2) “There shall be no discharge of polychlorinated biphenyl compounds.” Numerous typographical errors in the columns titled Proposed Daily Maximum and Monthly Averages.*

Appendix D – Reference Table 1 has been revised to address these concerns and is included at the end of this response to comments document.

Perkins Coie

1. **Pages 2-3, Table 1.** *The proposed limits for total residual chlorine and free available chlorine appear to have been transposed. Ordinarily, free available chlorine would be a subset of total residual chlorine, and as a result, the limit for total residual chlorine would be the greater of the two values.*

No change is proposed; these limits are accurate as stated and carry over from the existing permit.

2. *The permit proposes a pH limit ranging from 6.0 to 8.5. The footnote should presumably state that “No excursions greater than 9.0 or lower than 5.5 are allowed.”*

WAC 173-201A-030(2) (v) states that pH shall be within the range of 6.5 to 8.5 (freshwater) and 7.0 to 8.5 (marine water) with a human-caused variation within the above range of less than 0.5 units. The draft permit incorrectly lowered effluent limit to the allowed lower limit variation. The final permit will reflect the accurate water quality standard range of 6.5 to 8.5.

3. **Page 4, Condition S2.A.** *The first paragraph should read "~~Beginning on the effective date of this permit~~ with the first discharge of circulating cooling water blow down and lasting through the first year of operation, the permittee shall monitor the discharge of cooling water blowdown to Outfall 001 as follows:"*

Permit has been revised as noted.

4. **Page 4, Table 3, note 1.** *The proposed turbidity limit of 5.0 NTU does not correspond to the applicable state water quality standard. There is no turbidity standard for groundwater, and the permit states that this discharge will be to ground, not surface water. The surface water quality standard requires that a discharge shall not cause turbidity to "exceed 5 NTU over background turbidity when the background turbidity is 50 NTU or less, or have more than a 10 percent increase in turbidity when the background turbidity is more than 50 NTU." WAC 173-201A-030(2)(c)(vi). Stormwater monitoring and permit discharge requirements should be consistent with condition S4 of the Industrial Stormwater General Permit issued by Ecology on August 21, 2002, effective September 20, 2002.*

The General Permit provides a turbidity benchmark value of 25 NTU with a minimum sampling frequency of one sample collected per quarter. Note 1 of Table 2 has been revised as follows: "a discharge shall not cause turbidity to exceed 5 NTU over background turbidity when the background turbidity is 25 NTU or less, or have more than a 10% increase in turbidity when the background turbidity is more than 25 NTU."

5. **Page 5, Condition S2.B.** *This section should be deleted. As explained above, the oil/water separator will not discharge to Outfall 001.*

No change. Following EPA guidelines for technology-based limits, the oil/water separator is treated as a separate waste stream and will be retained.

6. **Page 5, Condition S2.C.** *The first paragraph should read "~~Beginning on the effective date of this permit~~ with the first discharge of circulating cooling water blow down and lasting through the expiration date, the permittee shall monitor cooling water blowdown discharge to Outfall 001 as follows:"*

Permit has been revised as noted.

7. **Page 7, Condition S3.A., paragraph 3.** *This paragraph should read that "DMRs for Outfall 001 must be submitted monthly whether or not the facility is discharging." The*

first paragraph of this section indicates that monitoring results for Outfall 002 need only be submitted for months when discharges occur.

Refer to Steven Eberl Permit comment #4 above.

8. **Page 10, Condition S4.** *This section proposes to require submittal of an O&M manual within 90 days of the permit's effective date, and then lists four components of the O&M manual. A detailed O&M manual covering the first two items -- emergency procedures and plant maintenance procedures -- cannot be prepared until engineering and construction has progressed further. Duke and Energy Northwest propose to provide that manual 90 days prior to commercial operation. The later two items -- maintenance procedures for the C-1 Pond and Outfall 001 -- concern facilities owned and maintained by the PDA. Although the Certificate Holder can request that the PDA provide informational copies to EFSEC, the Certificate Holder is not responsible for maintaining these facilities.*

As discussed previously, the permittee is proposing to use existing structures to discharge wastewater to the Chehalis River (Outfall 001) and site stormwater to the ground (Pond C-1). The Council has authority to ensure that these structures are properly designed, maintained, and will perform as required. The Council will require that the O&M manual for Pond C-1 maintenance procedures be submitted within 30 days of the permit's effective date. The O&M manual shall be updated 90 days before commercial operation to include for the remaining items listed under S4.

9. **Page 11, Condition S5.D.** *The sentence "Waste treatment and discharges to a drain field shall be in accordance with the manufacturer's instructions" should be deleted. Duke and Energy Northwest do not possess copies of any applicable manufacturer's instructions.*

Permit text has been revised to, "Waste treatment and discharges to a drain field shall be in accordance with the system's operating capacity."

10. **Page 14, Condition S11.** *This condition should be modified as follows "~~Within 60 days of permit issuance~~ At least 30 days prior to discharging cooling water blowdown, the permittee shall provide an engineering evaluation of the process water. . ."*

To acknowledge the permittee's current construction status, the permit text has been revised to, "Within 120 days of permit issuance, the permittee shall provide and engineering evaluation of the process water. . ." It is important that the permittee diligently address concerns raised as to whether water quality standards can be met during operation, without a mixing zone allowance. This condition will allow both the permittee and EFSEC to determine what future steps must be taken to ensure the permittee will be in compliance with the NPDES permit.

11. **Page 15, Condition S12.** *This provision should be revised as follows: "The permittee shall submit a sampling and quality assurance plan for the Councils review and approval ~~within 180 days of the effective date of this permit~~ at least 180 days prior to commercial operation."*

No change, as stated above, it is important that the permittee diligently address concerns raised as to whether water quality standards can be met during operation, without a mixing zone allowance. This condition will allow both the permittee and EFSEC to determine what future steps must be taken in a timely manner.

- 12. Page 16, Condition S12.C.** *The first paragraph of this condition should be revised as follows: "~~Within 90 days of permit issuance~~ At least 180 days prior to commercial operation, the permittee shall develop a plan for analyzing the Chehalis River . . ." The last paragraph of this condition should be revised to say "~~Within one year of permit issuance~~ 180 days after commercial operation, the permittee shall sample and analyze the receiving water for the approved Receiving Water Analysis Plan."*

Permit has been revised as noted.

- 13. Page 16, Condition S12.C.** *The facility will not discharge additional biochemical oxygen demand, so we do not understand the reason for requiring the receiving water study to include dissolved oxygen and biochemical oxygen demand.*

These parameters are part of the standard set of parameters required by Ecology, per Ecology's Permit Writers Manual, for receiving water studies.

- 14. Page 20, Condition S14.E.** *There is a typographical error in the third paragraph. It should read "Tests shall be conducted semi-annually . . ." to correspond to the first paragraph's requirement that tests occur once in the summer and once in the winter*

Reference to monthly testing has been removed from the subject paragraph.

- 15. Page 24, Condition S15.E.** *There is a typographical error in the first paragraph. It should read "Tests shall be conducted semi-annually . . ." to correspond to first sentence in this section requiring tests to occur once in the summer and once in the winter.*

Reference to monthly testing has been removed from the subject paragraph.

- 16. Page 31, Condition G14.** *This requirement appears to be inapplicable to the type of facility being permitted.*

No change. This general condition is applicable to the Satsop CT facility because it covers commercial discharges.

Terry O'Connor

- 1. Why doesn't the permit set a limit for dissolved oxygen or biological oxygen demand?**

Although the discharge from the Satsop CT facility is not expected to discharge any constituents that would create a biological or chemical oxygen demand, special condition S12 requires the permittee to analyze the receiving water, the Chehalis River, for both dissolved oxygen and biological oxygen demand. Because the previous permit decision indicated that the oxygen demand would be met by the mixing zone, which is no longer permitted, special condition S12 has been modified to include both dissolved oxygen and biological oxygen demand as part of the effluent study in addition to the receiving water study. If the effluent study demonstrates that the effluent cannot meet the water quality standard of no less than 8 mg/L dissolved oxygen, a new monitoring requirement and effluent limit for dissolved oxygen and, potentially, biological oxygen demand would be set.

2. Three years is not sufficient time to maintain records for wastewater discharges.

Special condition S3.D states that the permittee shall retain all records of monitoring activities and results for a minimum of three years. The Satsop project is also subject to recordkeeping requirements under the Site Certification Agreement, that require the project to maintain their records for the life of the project.

3. The project should be required to cut back production when they are not in compliance with the permit.

General condition G4 states that the permittee, in order to maintain compliance with its permit, shall control production and/or all discharges upon reduction, loss, failure, or bypass of the treatment facility until the facility is restored or an alternative method of treatment is provided.

REFERENCES

- Bell, M. C. 1986. *Fisheries handbook of engineering requirements and biological criteria*. U.S. Army Corps of Engineers. Office of the Chief of Engineers. Fish Passage Development and Evaluation Program, Portland, Oregon.
- Bjornn, T. C. and D. W. Reiser. 1991. *Habitat requirements of salmonids in streams*. Pages 83-138 in W. R. Meehan, editor. Influences of forest and rangeland management on salmonid fishes and their habitats. American Fisheries Society Special Publication 19. Bethesda, Maryland.
- Hallock, R. J., R. F. Elwell, and D. H. Fry, Jr. 1970. *Migrations of adult king salmon *Oncorhynchus tshawytscha* in the San Joaquin Delta as demonstrated by the use of sonic tags*. California Department of Fish and Game, Fish Bulletin 151.

Table 4: Satsop Combustion Turbine Project
NPDES Permit Fact Sheet
Wastewater Characterization: Phase I - Maximum

Parameter	Units	Source of Data	Influent from Ranney Wells	Water after Inlet Chiller Tower	Water from Oil/Water Separator	Water after Boiler Feedwater Treatment System (Including after HRSG)	Raw Water prior to Condenser Cooling Tower	All Water Streams prior to Condenser Cooling Tower	Water after Condenser Cooling Tower (Cooling Tower Blowdown)	Additonal Quench Water	Cooling Tower Blowdown with Additonal Quench Water	WAC 173-201A Standard Calculation Provided by the Applicant ⁵	
												Acute Criteria	Chronic Criteria
Arsenic	(mg/L)	1	0.00250	0.01000	0.00250	0.00000	0.00250	0.00253	0.02619	0.00250	0.01343	0.36	0.19
Cadmium	(mg/L)	1	0.00005	0.00020	0.00005	0.00000	0.00005	0.00005	0.00052	0.00005	0.00027	0.00047	0.00025
Chromium (Tri)	(mg/L)	1	0.00050	0.00200	0.00050	0.00000	0.00050	0.00051	0.00524	0.00050	0.00269	0.11603	0.03764
Copper	(mg/L)	1	0.00050	0.00200	0.00050	0.00000	0.00050	0.00051	0.00524	0.00050	0.00269	0.00285	0.00224
Iron	(mg/L)	1	0.00800	0.03200	0.00800	0.00001	0.00800	0.00808	0.08380	0.00800	0.04297	NA	NA
Mercury	(mg/L)	1	0.00010	0.00040	0.00010	0.00000	0.00010	0.00010	0.00105	0.00010	0.00054	0.0021	0.000012
Nickel	(mg/L)	1	0.00050	0.00200	0.00050	0.00000	0.00050	0.00051	0.00524	0.00050	0.00269	0.28435	0.03158
Lead	(mg/L)	1	0.00005	0.00020	0.00005	0.00000	0.00005	0.00005	0.00052	0.00005	0.00027	0.00779	0.00030
Selenium	(mg/L)	1	0.00100	0.00400	0.00100	0.00000	0.00100	0.00101	0.01047	0.00100	0.00537	0.02	0.005
Zinc	(mg/L)	1	0.00250	0.01000	0.00250	0.00000	0.00250	0.00253	0.02619	0.00250	0.01343	0.02294	0.02094
Ammonia	(mg/L)	2	0.00050	0.00200	0.00050	0.00000	0.00050	0.00051	0.00524	0.00050	0.00269		
TDS	(mg/L)	2	97.0	388.0	97.0	0.09700	97.0	98.01	1016.03	97.0	520.98		
TSS	(mg/L)	2	14.2	56.8	14.2	0.01420	14.2	14.35	148.74	14.2	76.27		
Temp. deg C		3	10.8		10.8		10.8		15.0	10.8	12.7		
Res. chlorine	(mg/L)	4							0.200	0.0	0.092		
pH		2	6.85		6.85		6.85		8.50	6.85	7.61		
Flow (gpm)			3847	78	25	188	3287	3587	346	404	750		
Flow (cfs)			8.59	0.17	0.06	0.42	7.34	8.01	0.77	0.90	1.68		
Flow (MGD)			5.54	0.11	0.04	0.27	4.73	5.17	0.50	0.58	1.08		

Notes: Concentrations in bold exceed WAC standards
TDS = Total dissolved solids deg C = degrees Centigrade
TSS = Total suspended solids gpm = gallons per minute
Res. Chlorine = residual chlorine cfs = cubic feet per second
mg/L = milligrams per liter MGD = million gallons per day

Source of Data: 1 Duke Energy North America, LLC (Nov 19, 2001) Submittal of Request for Amendment #4 to Site Certification Agreement Satsop Combustion Turbine Project Phase II
2 WPPSS (October, 1982), Section 2.4 - Hydrology for WNP-3, Ranney test data, surface water data, or if not available, groundwater data
3 Duke Energy North America (November 7, 2001), Request for Amendment #4 to Site Certification Agreement, Appendix B, Table titled “Means and Ranges of Parameters for Metals Monitoring Program at Well APW, 5 November 1980 – 28 October 1981” (Envirosphere, 1982 listed at bottom of table), upper limit for range of temperature given for entire year (10.4 – 10.8 deg C)
4 Duke Energy Grays Harbor (December 7, 2001), NPDES Permit Application for Permit No. WA-002496-1 Satsop Combustion Turbine Project
5 Same as in source of data #1 above except for cadmium, chromium, copper, nickel, lead, and zinc which were determined using the equations presented in WAC 173-201A using a hardness = 15 mg/L

Assumptions: Parameter concentrations in water from Ranney Wells is uniform
Parameter concentrations in water from Raw Water Well is same as those from Ranney Wells

Satsop Combustion Turbine Project
NPDES Permit Fact Sheet
Backup Calculations

WAC 173-201A – Surface Water Quality Standards (assuming hardness = 15 mg/L)

Parameter	Units	Value (Acute Criteria)	Equation Used
Cadmium	(mg/L)	0.00047	= (1.136672-((LN(15))*0.041838))*(EXP((1.128*(LN(15)))-3.828))/1000
Chromium	(mg/L)	0.11603	= (0.316)*(EXP((0.819*(LN(15)))+3.688))/1000
Copper	(mg/L)	0.00285	= (0.96)*(EXP((0.9422*(LN(15)))-1.464))/1000
Nickel	(mg/L)	0.28435	= (0.998)*(EXP((0.846*(LN(15)))+3.3612))/1000
Lead	(mg/L)	0.00779	= (1.46203-((LN(15))*0.145712))*(EXP((1.273*(LN(15)))-1.46))/1000
Zinc	(mg/L)	0.02294	= (0.978)*(EXP((0.8473*(LN(15)))+0.8604))/1000

Parameter	Units	Value (Chronic Criteria)	Equation Used
Cadmium	(mg/L)	0.00025	= (1.101672-((LN(15))*0.041838))*(EXP((0.7852*(LN(15)))-3.49))/1000
Chromium	(mg/L)	0.03764	= (0.86)*(EXP((0.819*(LN(15)))+1.561))/1000
Copper	(mg/L)	0.00224	= (0.96)*(EXP((0.8545*(LN(15)))-1.465))/1000
Nickel	(mg/L)	0.03158	= (0.997)*(EXP((0.846*(LN(15)))+1.1645))/1000
Lead	(mg/L)	0.00030	= (1.46203-((LN(15))*0.145712))*(EXP((1.273*(LN(15)))-4.705))/1000
Zinc	(mg/L)	0.02094	= (0.986)*(EXP((0.8473*(LN(15)))+0.7614))/1000

Wastewater Characterization Values – Phase I Maximum (parameter = arsenic for displaying example calculations)

Stream Identification	Units	Value	Equation Used
Influent from Ranney Wells	(mg/L)	0.00250	None - assumed to be the raw water concentrations
Water after Inlet Chiller Tower	(mg/L)	0.01000	= 0.00250mg/L * (312gpm/78gpm)
Water from Oil/Water Separator	(mg/L)	0.00250	None - assumed to be the raw water concentrations
Water after Boiler Feedwater Treatment System (including after HRSG)	(mg/L)	0.00000	= 0.00250mg/L * 0.001
Raw Water prior to Condenser Cooling Tower	(mg/L)	0.00250	None - assumed to be the raw water concentrations
All Water Streams prior to Condenser Cooling Tower	(mg/L)	0.00253	= (0.01000 mg/L * 78gpm + 0.00250 mg/L * 25gpm + 0.00000 mg/L * 180gpm + 0.00250 mg/L * 3287gpm) / 3587gpm
Water after Condenser Cooling Tower (Cooling Tower Blowdown)	(mg/L)	0.02619	= 0.00253 mg/L * (3587gpm/346gpm)
Additional Quench Water	(mg/L)	0.00250	None - assumed to be the raw water concentrations
Cooling Tower Blowdown with Additional Quench Water	(mg/L)	0.01343	= (0.02619 mg/L * 346 gpm + 0.00250 mg/L * 404 gpm) / 750 gpm

APPENDIX D: REFERENCE TABLES

COMPARISON OF EXISTING AND PROPOSED EFFLUENT LIMITS

Outfall 001

Parameter	Existing Daily Maximum	Existing Monthly Average	Proposed Daily Maximum	Proposed Monthly Average
Industrial Wastewater	Included with Cooling Tower Blowdown Discharges			
Ammonia, total as N	930 mg/L	46 mg/L	Not used	Not used
Chlorine, total residual	95 µg/L	47 µg/L	95 µg/L	47 µg/L
Cadmium, total	5.8 µg/L	2.9 µg/L	0.47 µg/L	0.25 µg/L
Copper, total	30 µg/L	15 µg/L	2.85 µg/L	2.24 µg/L
Iron, total	82 µg/L	40 mg/L	Not Used	Not Used
Lead, total	52 µg/L	26 µg/L	7.79 µg/L	0.30 µg/L
Zinc, total	229 µg/L	114 µg/L	22.9 µg/L	20.9 µg/L
Temperature ¹			¹⁰	
pH ²	Between 4.0 and 8.5 ³		Between 6.0 and 8.5	
Flow	0.74 MGD	0.66 MGD	1.08 MGD	1.08 MGD
Low Volume Waste Sources ^{4,5}	Oil/Water Separator Discharges			
Total Suspended Solids	100.0 mg/L	30.0 mg/L	100.0 mg/L	30.0 mg/L
Oil and Grease	20.0 mg/L	15.0 mg/L	20.0 mg/L	15.0 mg/L
Metal Cleaning Wastes	Included with Oil/Water Separator Discharges			
Total Suspended Solids	100.0 mg/L	30.0 mg/L	(see oil/water separator discharges above)	
Oil and Grease	20.0 mg/L	15.0 mg/L	(see oil/water separator discharges above)	
Copper, total	1.0 mg/L	1.0 mg/L	1.0 mg/L	1.0 mg/L
Iron, total	1.0 mg/L	1.0 mg/L	1.0 mg/L	1.0 mg/L
Once Through Cooling Water	No longer applicable			
Total Residual Chlorine/Halogen ^{6,7,8}	0.20 mg/L			
Cooling Tower Blowdown	Cooling Tower Blowdown			
Free available chlorine/halogen ^{7,8}	0.5 mg/L	0.2 mg/L	0.5 mg/L	0.2 mg/L
126 Priority Pollutants, except chromium and zinc	⁹	⁹	⁹	⁹
Chromium, total	0.2 µg/L	0.2 µg/L	116 µg/L	37.6 µg/L
Zinc, total	1.0 µg/L	1.0 mg/L	36.5 µg/L	33.1 µg/L
Total Suspended Solids	Not used	Not used	100.0 mg/L	30.0 mg/L
Mercury	Not used	Not used	2.1 µg/L	0.012 µg/L
Selenium	Not used	Not used	20 µg/L	5 µg/L

General Note: Existing effluent limits are based on mixing zone. Proposed limits have no mixing zone.

- 1
- The discharge temperature shall be such that the applicable Water Quality Standards for temperature will be complied at the edge of the dilution zone. Temperature shall not exceed 18.0°C. Temperature increases shall not, at any time, exceed $t = 28/(T+7)$, as described in WAC 173-201A-030 for Class A waters. For purposes hereof, “t” represents the maximum permissible temperature increases measured at a mixing zone boundary and “T” represents the background temperature as measured at a point unaffected by the discharge and representative of the highest water temperature in the vicinity of the discharge. When natural conditions exceed 18.0°C, no temperature increases will be allowed which will raise the receiving water temperature by greater than 0.3°C.
- 2
- Applicant shall include alarm systems for pH control to provide indication of any variance from established limits. If the continuous pH instrumentation malfunctions, grab samples taken every 6 to 10 hours shall be substituted.
- 3
- The total time during which pH values are outside this range shall not exceed 7 hours and 26 minutes in any calendar month, and no individual excursion shall exceed 60 minutes. An excursion is an unintentional and temporary incident of pH exceedance. No excursions greater than 9.5 or lower than 5.5 are allowed.
- 4
- The term “low volume waste sources” means, taken collectively as if from one sources, wastewater from all sources except those for which specific limitations are otherwise established in 40 CFR 423. Low volume wastes sources include, but are not limited to, wastewaters from wet scrubber air pollution control systems, ion exchange water treatment systems, water treatment evaporator blowdown, laboratory and sampling streams, boiler blowdown, floor drains, cooling water basin cleaning wastes, and recirculating house service water systems. Sanitary and air conditioning wastes are not included.
- 5
- Applicant shall mix effluent from this source with cooling water blowdown when the cooling tower is operational. When the cooling tower is not operational, low volume wastes must be retained or a minimum dilution flow of 200 gpm must be provided from the recirculated cooling waste inventory or plant makeup water supply.
- 6
- Total residual chlorine may not be discharged from any single generating unit for more than 2 hours per day unless the discharge demonstrates to the permitting authority that discharge for more than 2 hours is required for macroinvertebrate control. Simultaneous multi-unit chlorination is permitted.
- 7
- Neither free available nor total residual chlorine may be discharged from any unit for more than 2 hours in any 1 day and not more than one unit in any plant may be discharge free available or total residual chlorine at any one time unless the utility can demonstrate to the Council that the units cannot operate below this level of chlorination.
- 8
- If discharge is continued during the chlorination cycle, continuous amperometric analysis shall be used. A grab sample shall be taken at least weekly to demonstrate continuous monitor performance. If discharge is terminated during chlorination, amperometric titration of grab samples may be used to verify total residual chlorine concentration.
- 9
- No detectable amount.
- 10
- Temperature shall not exceed 15.6°C. A maximum amount of 0.9 cubic feet per second (404 gpm or 0.58 MGD) quench water may be used solely to cool the discharge to 15.6°C, subject to periods in which an additional withdrawal will actually reduce the temperature of the discharge.